

CLAIMS

1. An antenna for use with an object having a conductive surface, the antenna comprising:
 - a patch antenna circuit configured to receive an interrogation signal and to radiate a modulated signal;
 - the patch antenna circuit comprising means for attachment to the conductive surface of the object, and a first conductive lead electrically coupled to the conductive surface of the object to use the conductive surface of the object as a functional element of the patch antenna circuit for receiving the interrogation signal and radiating the modulated signal.
2. The antenna of claim 1 wherein the patch antenna circuit comprises a patch antenna formed on a dielectric base.
3. The antenna of claim 2, comprising a second conductive lead coupled to the patch antenna.
4. The antenna of claim 3 wherein the dielectric base comprises an adhesive formed thereon for attaching the dielectric base to the reflective surface.
5. A communication device for use with an object having a conductive surface, the communication device comprising:
 - an electronic circuit configured to receive an interrogation signal and to generate a modulated signal in response to the interrogation signal; and
 - an antenna circuit coupled to the electronic circuit and configured for attachment to the conductive surface of the object to use the conductive surface as a

component of the antenna circuit to receive the interrogation signal and to radiate the modulated signal.

6. The device of claim 5 wherein the antenna circuit comprises a patch antenna and a dielectric base.

7. The device of claim 6, comprising a first conductive member coupled to the patch antenna and a second conductive member coupled to the reflective surface of the object.

8. The device of claim 7 wherein the dielectric base comprises an adhesive formed thereon for attaching the dielectric base to the reflective surface.

9. A tagged object for use in a radio frequency communication system, comprising:

an electrically-conductive surface integrally formed as part of the tagged object;

a communication device that comprises an electronic circuit configured to receive an interrogation signal and to generate a modulated signal in response to the interrogation signal; and

an antenna circuit coupled to the electronic circuit and attached to the electrically-conductive surface of the object to use the conductive surface as a component of the antenna circuit to receive the interrogation signal and to radiate the modulated signal.

10. The object of claim 9 wherein the antenna circuit comprises a patch antenna formed on a dielectric base.

11. The object of claim 10, further comprising a first conductive member coupled to the patch antenna and a second conductive member coupled to the reflective surface of the object.

12. The object of claim 11 wherein the dielectric base comprises an adhesive formed thereon for attaching the dielectric base to the reflective surface.

13. A communication system for use with an object formed of a conductive material, the system comprising:

a first communication device configured to transmit an interrogation signal and to receive a modulated signal in response thereto; and

a second communication device comprising an electronic circuit configured to receive the interrogation signal and to generate a modulated signal in response to the interrogation signal, and an antenna circuit coupled to the receiver circuit and attached to the object and electrical coupling to the conductive material of the object to use the conductive material as a component of the antenna circuit for receiving the interrogation signal and radiating the modulated signal.

14. The system of claim 13 wherein the patch antenna circuit comprises a patch antenna and a dielectric base.

15. The system of claim 14, further comprising a first conductive member coupled to the patch antenna and a second conductive member coupled to the reflective surface of the object.

16. The system of claim 15 wherein the dielectric base comprises an adhesive formed thereon for attaching the dielectric base to the reflective surface.

17. A monitoring system, comprising:
an object to be monitored, the object formed of a conductive material;
a first communication device configured to transmit an interrogation signal
and to receive a modulated signal in response thereto; and
a second communication device comprising an electronic circuit
configured to receive an interrogation signal and to generate a modulated signal in
response to the interrogation signal, and an antenna circuit coupled to the receiver
circuit and attached to the object and electrical coupling to the conductive material of
the object to use the conductive material as a component of the antenna circuit to
receive the interrogation signal and to radiate the modulated signal whereby a condition
of the object is monitored by the first communication device.

18. The system of claim 17 wherein the patch antenna circuit
comprises a patch antenna and a dielectric base.

19. The system of claim 18, further comprising a first conductive
member coupled to the patch antenna and a second conductive member coupled to the
reflective surface of the object.

20. The system of claim 19 wherein the dielectric base comprises an
adhesive formed thereon for attaching the dielectric base to the reflective surface.